

### **REMARKS**

A petition for a one month extension of time and the fee for this extension are provided herewith. Authorization is provided herewith to pay any underpayment of fees or credit any overpayment of fees to Deposit Account No. 02-4800.

As may be appreciated from the above listing of claims, the claims have been amended herein. Support for the new claims 37 and 38 may be appreciated from at least paragraphs 6-7 and 20 of the specification. New claims 35 and 36 are also supported by at least paragraphs 22 and 24 of the specification.

#### **I. THE CLAIMS ARE ALLOWABLE OVER THE CITED ART**

The Examiner previously rejected claims 19-34 under 35 U.S.C. § 103 in view of the combination of "A Review of Current Routing Protocols for Ad Hoc Mobile Wireless Networks," IEEE, April 1999, by Elizabeth et al. (hereafter "Elizabeth et al.") and U.S. Patent Application Publication no. 2005/0041627 to Duggi in the Office Action dated January 4, 2010 (hereafter "Office Action"). (Office Action, at 2).

##### **A. Burden Of Proving Obviousness Under 35 U.S.C. § 103**

"All words in a claim must be considered in judging the patentability of that claim against the prior art." MPEP § 2143.03 (emphasis added). "When evaluating claims for obviousness under 35 U.S.C. 103, **all the limitations of the claims must be considered and given weight.**" MPEP § 2143.03. "If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious." *Id.* "A 35 U.S.C. 103 rejection is based on 35 U.S.C. 102(a), 102(b), 102(e), etc. depending on the type of prior art reference used and its publication or issue date." MPEP § 2141.01.

To establish a *prima facie* case of obviousness, an Examiner must show that an invention would have been obvious to a person of ordinary skill in the art at the time of the invention. MPEP § 2141. "Obviousness is a question of law based on underlying factual inquiries." *Id.* The factual inquiries enunciated by the Court include "ascertaining the differences between the claimed invention and the prior art" and "resolving the level of ordinary skill in the pertinent art." MPEP § 2141.

"A statement that modifications of the prior art to meet the claimed invention would have been 'well within the ordinary skill of the art' at the time the claimed invention was made' because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references." MPEP § 2143.01. "[R]ejections on obviousness cannot be sustained by mere conclusory statements; instead, **there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.**" MPEP § 2143.01 (citing *KSR*, 82 U.S.P.Q.2d at 1396) (emphasis added).

For instance, an invention that permits the omission of necessary features and a retention of their function is an indicia of nonobviousness. *In re Edge*, 359 F.2d 896, 149 U.S.P.Q. 556 (CCPA 1966); MPEP 2144.04. A conclusory statement to the contrary is insufficient to rebut such an indicia of nonobviousness. *See* MPEP § 2143.01.

Moreover, "[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious." MPEP § 2143.01. Also,

"the proposed modification cannot render the prior art unsatisfactory for its intended purpose."

MPEP § 2143.01.

**B. Duggi Is Not Prior Art**

The Duggi reference is a published patent application. The patent application was filed on January 23, 2004, which is after the priority date of the present application. (The present application claims priority to a German patent application filed in November of 2003).

"The 35 U.S.C. 102(e) critical reference date of a U.S. patent or U.S. application publications and certain international application publications entitled to the benefit of the filing date of a provisional application under 35 U.S.C. 119(e) is the filing date of the provisional application **with certain exceptions if the provisional application(s) properly supports the subject matter relied upon to make the rejection in compliance with 35 U.S.C. 112, first paragraph.**" MPEP § 2136.03 (emphasis added); *see also* MPEP § 706.02(f)(1).

The Duggi reference claims priority to a provisional patent application. The only way the Duggi reference may be prior art is if the content of that provisional patent application discloses the content relied upon by the Examiner. MPEP § 2136.03

The provisional application the Duggi reference claims priority to is U.S. Provisional Patent Application No. 60/497,274 filed on August 22, 2003. For the Examiner's reference, a copy of U.S. Provisional Patent Application No. 60/497,274 is provided herewith. Of course, the Examiner may access the contents of this application electronically as well via Public PAIR.

The text cited by the Examiner in the cited published patent application of Duggi is not accorded the filing date of the provisional patent application from which it claims priority. All the paragraphs relied upon by the Examiner, such as paragraph 50 and Figure 3 of Duggi, are not

present in U.S. Provisional Patent Application No. 60/497,274. Indeed, U.S. Provisional Patent Application No. 60/497,274 does not contain any drawings. U.S. Provisional Patent Application No. 60/497,274 contains no disclosure of any service discovery request message sent from a client or service requester.

The portions of the Duggi reference relied upon by the Examiner are not prior art under 35 U.S.C. § 102(e). Indeed, the teaching relied upon by the Examiner to reject all of the pending claims are not supported by the provisional application of Duggi. This information is only afforded the filing date of the Duggi reference, January 23, 2004, which is after the priority date for the claims of the present application. The Duggi reference is clearly not prior art to the claims of the present application.

**C. The Pending Claims Are Allowable**

The pending claims all require a system or method to include routers that have a routing table. The routing tables of the routers that receive a service discovery request message are updated with routing information pertaining to the received service discovery request message. At least a portion of the routers is also configured to update their routing tables with routing information of a service discovery reply message transmitted from a service provider responding to the service discovery request message of the service requester.

The cited combination of art by the Examiner, which includes both Duggi and Elizabeth et al., cannot render the pending claims obvious. In fact, Elizabeth et al. specifically teach away from the pending claims. Also, as discussed above, Duggi is not prior art.

**1. Elizabeth et al. Teach Away From The Claims**

The Examiner has cited page 48 of Elizabeth et al. as suggesting the routers, service provider and service requester of the pending claims. To the contrary, Elizabeth et al. explicitly teach that the routers of the system disclosed on page 48 **"that are not on a selected path do not maintain routing information or participate in routing table exchanges."** (emphasis added). Contrary to the explicit teaching of Elizabeth et al., the method and system of the pending claims require all the routers to update routing tables. All routers that receive a service discovery request message in the pending claims update their routing tables in response to receipt of the message. Contrary to the teaching of Elizabeth et al., the routers of a selected path are not the only routers involved in maintaining routing information in the system and method of the pending claims.

**2. The Cited Art Do Not Teach Routers That Update Routing Tables After Receiving A Service Discovery Request Message**

The cited art also fails to teach or suggest any router that updates a routing table with routing information pertaining to a received service discovery request. Indeed, there is no teaching or suggestion of such a requirement in Elizabeth et al. or the Duggi.

The cited art teaches that routing tables are only updated in view of "full dump" or "incremental packets" relayed between routers (page 47 of Elizabeth et al.) or via hello messages (page 48 of Elizabeth et al.). The systems disclosed in the cited prior art only teach or suggest the forwarding of service discovery request messages to other routers until a service provider receives the message. There is no teaching or suggestion of any router being configured to update its routing table in response to the receipt of a service discovery request message. Indeed,

Elizabeth et al. teach that the routers **should not maintain routing information**. (Elizabeth et al. at 48).

The cited prior art does not teach or suggest all the limitations of the pending claims. In fact, the cited prior art teaches away from the pending claims. Also, as discussed above, Duggi is not a prior art reference.

For at least the above reasons, the pending claims are allowable over the cited art.

**3. It Is Impremssible To Combine Elizabeth et al. With Duggie**

Even if Duggi is improperly applied to the claims of the present applicaton, it is impermissible to combine Duggi with a reference that teaches away from routers each maintaining their own routing table as taught by Elizabeth et al.

"[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious." MPEP § 2143.01. Also, "the proposed modification cannot render the prior art unsatisfactory for its intended purpose." MPEP § 2143.01.

## **II. CONCLUSION**

For at least the above reasons, reconsideration and allowance of all pending claims is respectfully requested.

Dated: April 26, 2010

Respectfully submitted,

/Ralph G. Fischer/

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**PROVISIONAL APPLICATION FOR PATENT COVER SHEET**

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

Express Mail Label No. EU950127803US

INVENTOR(S)					
Given Name (first and middle [if any])		Family Name or Surname		Residence (City and either State or Foreign Country)	
Mohan Reddy		Duggi		Garland, Texas	
Additional inventors are being named on the _____ separately numbered sheets attached hereto					
TITLE OF THE INVENTION (500 characters max)					
COLLECTION OF ACTIVE ROUTE TOPOLOGY IN AODV PROTOCOL					
Direct all correspondence to: CORRESPONDENCE ADDRESS					
<input checked="" type="checkbox"/> Customer Number:		<div style="border: 1px solid black; padding: 5px; display: inline-block;">23990</div>			
OR					
<input type="checkbox"/> Firm or Individual Name					
Address					
Address					
City		State		Zip	
Country		Telephone		Fax	
ENCLOSED APPLICATION PARTS (check all that apply)					
<input checked="" type="checkbox"/> Specification Number of Pages 3		<input type="checkbox"/> CD(s), Number _____			
<input type="checkbox"/> Drawing(s) Number of Sheets _____		<input checked="" type="checkbox"/> Other (specify) Certificate of Mailing by Express Mail; Fee Transmittal for FY 2003 (in duplicate)			
<input type="checkbox"/> Application Date Sheet. See 37 CFR 1.76					
METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT					
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.				FILING FEE Amount (\$)	
<input checked="" type="checkbox"/> A check or money order is enclosed to cover the filing fees.				<div style="border: 1px solid black; padding: 10px; text-align: center;">160.00</div>	
<input checked="" type="checkbox"/> The Director is hereby authorized to charge filing fees or credit any overpayment to Deposit Account Number: 50-0208					
<input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.					
The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.					
<input checked="" type="checkbox"/> No.					
<input type="checkbox"/> Yes, the name of the U.S. Government agency and the Government contract number are: _____					

[Page 1 of 2]

Respectfully submitted,

SIGNATURE



TYPED or PRINTED NAME William A. Munck

TELEPHONE 972-628-3600

Date August 22, 2003

REGISTRATION NO. 39,308

(if appropriate)

Docket Number: SAMS01-00288

**USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT**

This collection of information is required by 37 CFR 1.51. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop Provisional Application, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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16235 U.S. PTO  
60/497274





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# FEE TRANSMITTAL for FY 2003

Effective 01/01/2003. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$ ) 160.00

## Complete if Known

Application Number  
Filing Date  
First Named Inventor Mohan Reddy Duggi  
Examiner Name  
Art Unit  
Attorney Docket No. SAMS01-00288

## METHOD OF PAYMENT (check all that apply)

☒ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☒ Deposit Account:

Deposit  
Account  
Number  
Deposit  
Account  
Name

50-0208

Davis Munck

The Commissioner is authorized to: (check all that apply)

☐ Charge fee(s) indicated below ☒ Credit any overpayments  
☐ Charge any additional fee(s) during the pendency of this application  
☐ Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account.

## FEE CALCULATION

### 1. BASIC FILING FEE

Large Entity Fee Code	Small Entity Fee Code	Fee Description	Fee Paid
1001 750	2001 375	Utility filing fee	
1002 330	2002 165	Design filing fee	
1003 520	2003 260	Plant filing fee	
1004 750	2004 375	Reissue filing fee	
1005 180	2005 80	Provisional filing fee	160.00
SUBTOTAL (1)			(\$ ) 160.00

### 2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

Extra Claims Fee from below Fee Paid  
Total Claims -20\*\* =  X  =   
Independent Claims -3\*\* =  X  =   
Multiple Dependent  =

Large Entity Fee Code	Small Entity Fee Code	Fee Description
1202 18	2202 9	Claims in excess of 20
1201 84	2201 42	Independent claims in excess of 3
1203 280	2203 140	Multiple dependent claim, if not paid
1204 84	2204 42	** Reissue independent claims over original patent
1205 18	2205 9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) (\$ ) 0.00

\*\*or number previously paid, if greater; For Reissues, see above

## FEE CALCULATION (continued)

### 3. ADDITIONAL FEES

Large Entity Fee Code	Small Entity Fee Code	Fee Description	Fee Paid
1051 130	2051 65	Surcharge - late filing fee or oath	
1052 50	2052 25	Surcharge - late provisional filing fee or cover sheet	
1053 130	1053 130	Non-English specification	
1812 2,520	1812 2,520	For filing a request for ex parte reexamination	
1804 920*	1804 920*	Requesting publication of SIR prior to Examiner action	
1805 1,840*	1805 1,840*	Requesting publication of SIR after Examiner action	
1251 110	2251 55	Extension for reply within first month	
1252 410	2252 205	Extension for reply within second month	
1253 930	2253 465	Extension for reply within third month	
1254 1,450	2254 725	Extension for reply within fourth month	
1255 1,970	2255 985	Extension for reply within fifth month	
1401 320	2401 160	Notice of Appeal	
1402 320	2402 160	Filing a brief in support of an appeal	
1403 280	2403 140	Request for oral hearing	
1451 1,510	1451 1,510	Petition to institute a public use proceeding	
1452 110	2452 55	Petition to revive - unavoidable	
1453 1,300	2453 850	Petition to revive - unintentional	
1501 1,300	2501 650	Utility issue fee (or reissue)	
1502 470	2502 235	Design issue fee	
1503 830	2503 315	Plant issue fee	
1460 130	1460 130	Petitions to the Commissioner	
1807 50	1807 50	Processing fee under 37 CFR 1.17(q)	
1808 180	1808 180	Submission of Information Disclosure Stmt	
8021 40	8021 40	Recording each patent assignment per property (times number of properties)	
1809 750	2809 375	Filing a submission after final rejection (37 CFR 1.129(a))	
1810 750	2810 375	For each additional invention to be examined (37 CFR 1.129(b))	
1801 750	2801 375	Request for Continued Examination (RCE)	
1802 900	1802 900	Request for expedited examination of a design application	

Other fee (specify)

\*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$ ) 0.00

## SUBMITTED BY

Name (Print/Type) William A. Munck Registration No. 39,308 Telephone 972-628-3600  
Signature [Signature] Date August 22, 2003

WARNING: information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

This collection of information is required by 37 CFR 1.17 and 1.27. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, Washington, DC 20231.

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DOCKET NO. SAMS01-00288  
Customer No. 23990

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: : MOHAN REDDY DUGGI  
For : COLLECTION OF ACTIVE ROUTE TOPOLOGY IN  
AODV PROTOCOL

MAIL STOP PROVISIONAL PATENT APPLICATION

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

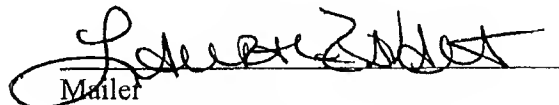
CERTIFICATE OF MAILING BY POST OFFICE EXPRESS MAIL

The undersigned hereby certifies that the following documents:


1. Postcard receipt;
2. Check in the amount of \$160.00 for the provisional patent application filing fee;
3. Fee Transmittal for FY 2003 (in duplicate);
4. Provisional Application for Patent Cover Sheet (1 page) (in duplicate); and,
5. Specification (3 pages)

relating to the above application, were deposited as "Express Mail", Mailing Label No. EU950127803US with the United States Postal Service, addressed to: Mail Stop Provisional Patent Application, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on August 22, 2003.

Date: 8/22/03

  
Mailer

Date: Aug. 22, 2003

  
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ELECTRONICS

**Samsung Telecommunications America, L.P.  
INVENTION DISCLOSURE FORM**

**Invention Title:** Collection of active route topology in AODV protocol

**1. General purpose of the invention. State in general terms what the objectives of the invention are.**

This invention is geared towards the area of Mobile AdHoc Networks and the associated routing protocols. In particular, it is directed towards AODV or similar reactive, ad-hoc routing protocols.

The invention describes a way to obtain the complete path information of active routes in an efficient manner.

**2. Description of the invention in detail (including operation, purpose, environment, and how problems are solved).**

Three new message formats are defined to collect the path information. They are path marker request, path marker reply and gratuitous path marker reply messages.

Every time a new destination is added to the routing table, if the precursor list is null for that entry, a path marker request will be sent to that destination. When an intermediate node receives this message, it learns the path information to the source. It adds its own IP address to the path marker message and relays it to the next hop along the path to the destination. Destination extracts the complete path information back to the source and sends a path marker reply message with its own IP address. When an intermediate node receives the reply message, it learns the path information to the destination. It appends its IP address to the path marker reply message and relays it to the next hop on the route to the source. When the source node receives the path marker reply message, it has all the path information from itself to the requested destination.

When a node performs a successful local link repair, it sends a path marker request message to the destination of the repaired link. When it receives the reply, first it learns the path information to the destination and initializes a gratuitous path marker reply message with the partial path information from itself to the destination and broadcasts it if the precursor list has more than one entry. If the precursor list for the repaired link destination has only one entry, then the gratuitous path marker reply message is unicasted. On reception of this message, an intermediate node first checks the hop count of the message with the one the routing table maintains for the destination of the repaired link. If they are not equal, it simply discards the message. If they are equal, it learns the path information to the destination of the repaired link. If the precursor is not null, it appends its own IP address to that message, increments the hop count and sends out the message.

When a node receives a RERR message or local link repair results in a failure, it updates its partial topology information accordingly.

**3. Describe the Prior Art, Method or performance of the invention (including any related publicly available information such as journal articles or patents).**

AODV itself provides some level of path information. "Trace route" application can be used to obtain the complete path information of a route.

**4. What are the disadvantages of the prior art?**

The only routing information the AODV protocol keeps track is the destination and the next hop, which is inadequate. "Trace route" is not realtime and not reactive to the topology changes. Moreover, every node in a route have to send trace route messages to collect the full path information.

**Samsung Telecommunications America, L.P.  
INVENTION DISCLOSURE FORM**

**Invention Title:** Collection of active route topology in AODV protocol

Thus, the current state of the art is either (a) not complete or (b) inefficient

**5. Describe how your invention overcomes the shortcomings of the prior art?**

It collects the complete path information by taking advantage of source route mechanism still keeping the control overhead to minimum. For every active route, only the node that initiates the route discovery, and any node that does local link repair have to send the source route messages. Since the path information is collected only for the routes that are changed, no periodic control packet exchange is required.

**7. What are the potential applications and/or markets for this invention?**

Mobile AdHoc Networks are gaining in usage and importance. At the present time, AODV appears to be the most suitable and scalable ad-hoc routing protocol. However, it doesn't have efficient means for obtaining topological information about active routes. This information is useful in several situations:

- debugging the ad-hoc network protocols
- graphical view of the ad-hoc network as it "evolves"
- locating interesting nodes in the ad-hoc network

Any future Samsung product that incorporates ad-hoc routing technology will also use this invention in situations shown above.



ELECTRONICS

Samsung Telecommunications America, L.P.  
INVENTION DISCLOSURE FORM

Invention Title: Collection of active route topology in AODV protocol

PATENT APPLICATION SERIAL NO. \_\_\_\_\_

U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICE  
FEE RECORD SHEET

08/26/2003 AADDF01 00000108 60497274

01 FC:1005 160.00 0P

PTO-1556  
(5/87)